UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,949	06/29/2001	Steven Eric Linthicum	RD-29070	1048

6147 7590 11/05/2003

GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH CENTER
PATENT DOCKET RM. 4A59
PO BOX 8, BLDG. K-1 ROSS
NISKAYUNA, NY 12309

EXAMINER	
MILLER, CRAIG S	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/681,949	Lipthicum et al.
Examiner	**Group Art Unit**
Craig Steven Miller	2857

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 22 August 2003.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-25 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-25 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Reference(s) Cited, PTO-892

☐ Notice of Informal Patent Application, PTO-152

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Other _____

Office Action Summary

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-25 are rejected under 35 U.S.C. 103 as being unpatentable over Jayaram *et al.* (PCT/US99/30753) in view of Dede (Congressional testimony, Joint Hearing on Educational Technology in the 21st Century), "Industrial Haptics" press release (hereafter referred to as "Press Release"), Boeing/SensAble VR product as described within the SensAble Press Release of 10 August 1999 (hereafter referred to as SensAble), Dede, and Nitta *et al.* (GB 2,327,289).

As to claims 1, 4-9 and 13-19 and 23, Jayaram *et al.* discloses the claimed invention essentially as claimed except that Jayaram *et al.*, disclosing the system's use for ensuring assembly but does not specify its use of VR in maintenance. At the bottom of column 1, Jayaram *et al.* discusses the fallacy of assuming that disassembly is simply the reverse of assembly. This clearly implies to one of ordinary skill in the art that such disassembly relates to maintenance (at least to the extent of removing parts for maintenance) since there is no other logical reason for concerns about disassembly. Furthermore, Press Release and SensAble specifically suggest the use of VR/Haptic technologies for determining maintainability of systems. Therefore, because Jayaram *et al.*, Press Release, and SensAble are all within the art of VR/Haptic modeling, it would have been obvious to one of ordinary skill in the art at the time of the invention that one should use such VR/Haptic technologies for determining the maintainability of systems with a device such as Jayaram *et al.* so as to receive the expected benefits derived therefrom such as enhanced system flexibility and maintainability as implied in Jayaram *et al.* and expressly stated in Press Release, and SensAble absent a showing of unexpected results or synergistic effect from any particular claimed combination. Jayaram *et al.* as modified above does not specify that VR should be used for the actual training of maintenance personnel. SensAble discloses at the bottom of page 1 that virtual prototyping should be used for, "*...finding and avoiding assembly or* ***maintenance problems*** *early in the design cycle...can also be used to lower the cost of* ***maintenance training*** *by eliminating the need for expensive physical mockups.* (emphasis added)" Dede discloses starting on page 9 through 12 that VR was then being used for teaching in general and particularly that VR should be used for training students in maintenance tasks. Press Release suggest in column 2 that Haptic/VR technology should be used for design of maintainability and maintenance training.

Therefore, because Jayaram *et al.*, Press Release, SensAble and Dede are all within the art of VR modeling, it would have been obvious to one of ordinary skill in the art at the time of the invention that one should use VR for training maintenance personnel using a system such as Jayaram *et al.* so as to receive the expected benefits derived therefrom such as enhanced system flexibility. Furthermore, Jayaram *et al.* as modified above does not specify how the VR system should inform the personnel of the assembly steps. Nitta *et al.* discloses that personnel may be have assembly information presented in a step-by-step manner. Therefore, because Jayaram *et al.* as modified above and Nitta *et al.* are both within the art of training assembly personnel, it would have been obvious to one of ordinary skill in the art at the time of the invention that one should use step-by-step instruction display for training maintenance personnel using a system such as Jayaram *et al.* as modified above so as to receive the expected benefits derived there from such as enhanced step repeatability as found in Nitta *et al.* absent a showing of unexpected results or synergistic effect from any particular claimed combination.

More particularly with respect to claims 4, 13, 16 and 19, said claims are directed towards importing CAD data. Jayaram *et al.* discloses such data import on page 4.

More particularly with respect to claims 5, 6, 16, 17 and 23, said claims are directed towards creating component path sequences. Jayaram *et al.* discloses on page 6 VR determined component path collision avoidance, on page 10, altering such trajectories and on page 12, trying multiple alternative sequences.

As to claims 2, 3, 10-12, 20-22, 24 and 25, said claims are directed towards specific multimedia information presentation to training personnel. Jayaram *et al.* as modified above discloses that personnel may be have assembly information presented in a step-by-step manner but does not specify the use of multimedia or natural language. Dede discloses at the bottom of page 10 that information presentation should be personalized for the student's learning style, including written and voice. Because Jayaram *et al.* and Dede are both within the art of training, it would have been obvious to one of ordinary skill in the art at the time of the invention that one should use computer generated written and/or verbal instruction training to maintenance personnel using a

system such as Jayaram *et al.* so as to receive the obvious benefits derived there from such as enhanced student learning as taught by Dede.

More particularly with respect to claim 24, said claim is directed towards selecting a method of instruction presentation. This is a common teaching technique, but is also merely a matter of making the output mode adjustable. "*...adjustability, where needed, is not a patentable advance.*" In re Stevens, 101 USPQ 284 (CCPA 1954), In re Brandt, 20 CCPA (Patents) 1005, 64 F.2d 693, 17 USPQ 295.

3. Applicant's arguments with respect to the presented claims have been considered but are moot in view of the new grounds of rejection.

4. The prior art made of record but not relied upon are deemed pertinent to applicant's disclosure.

Mahoney (Giving Engineers the Magic Touch, Computer graphics World, August 1999) discloses use of the Boeing/SensAble device.

Avila et al. (Abstract of A Haptic Interaction Method for Volume Visualization, 7th IEEE Visualization '96 Conference) discloses the use of VR software with Haptic devices.

Boeing Voxmap press release (Voxmap Pointshell (VPS) Software Library) discloses the use of VR software for 3-D collision modeling.

5. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Craig Steven Miller whose telephone number is (703) 305-9730. Art Unit facsimile services are now available at (703) 872-9306.

The Examiner can normally be reached on Mondays-Fridays from 7:30am-4pm EST. Should repeated attempts to reach the Examiner be unsuccessful, the Examiner's Supervisor, Marc Hoff may be reached at (703) 308-1677.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

Craig Steven Miller (ss)
28 October 2003

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800